

**DATA ATTRIBUTE RATING SYSTEM
(DARS) SUPPORT SOFTWARE
Beta Version 1.1**

USER'S MANUAL

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DISCLAIMER

As the Environmental Protection Agency has indicated in Emission Inventory Improvement Program (EIIP) documents, the choice of methods to be used to estimate emissions depends on how the estimates will be used and the degree of accuracy required. Methods using site-specific data are preferred over other methods. These documents are non-binding guidance and not rules. EPA, the States, and others retain the discretion to employ or to require other approaches that meet the requirements of the applicable statutory or regulatory requirements in individual circumstances.

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INTRODUCTION TO THE DARS SOFTWARE USER'S MANUAL, BETA VERSION

The purpose of this user's manual is to provide Beta testers with enough information to thoroughly evaluate the Data Attribute Rating System (DARS) software. Using the enclosed information, Beta testers should be able to load the software and use the program to assign DARS ratings to various elements of their emission inventory and to compile these individual ratings into composite quality ratings for the overall inventory. The DARS software also facilitates the evaluation of the quality of individual segments of the inventory.

This introduction provides background information and outlines the goals of the DARS program and the goals of this Beta test. The technical basis for the DARS program is not covered in this user's manual, but is presented in Appendix F of the Emission Inventory Improvement Program (EIIP) Quality Assurance Procedures document. Beta users should refer to Appendix F when testing the DARS software.

The DARS software has been reviewed by several members of the EIIP Quality Assurance committee. The input received from these reviewers will be very useful to the EPA. For the most part, the comments concerned how to make the software more user-friendly and useful to state agency personnel. The U.S. Environmental Protection Agency (EPA) was able to incorporate some of the suggested improvements; for example, the program was revised so the user can clearly identify the source being rated on the screen, as well as the inventory name. The spreadsheet import capability was also expanded based on comments received. The EPA was not able to address all of the comments, however. Some outstanding suggested revisions are discussed below.

One of the most significant comments received was that the rating sessions should be tailored for evaluating point, area, mobile, and biogenic inventories separately. Several reviewers made this suggestion because the methods used to evaluate the quality of each type of inventory can vary significantly. Some examples of comments provided to make the program more user-friendly pertain to the need for lookup screens for information such as source classification codes (SCCs), standard industrial classification (SIC) codes, and area and mobile source (AMS) codes with their descriptions. It was also suggested that a library of default or example ratings be developed and provided with the system, and that the software include some type of on-line help or on-line demo program. One reviewer suggested that the program should allow the user to perform quality assurance/quality control (QA/QC) checks to identify assigned scores that are

different from those suggested in the EIIP QA Procedures document.¹ It was also suggested that the user be able to browse and edit the database or spreadsheet after it is imported into the DARS program. After the rating sessions are complete, the user moves into the "Reports" menu options. A very good suggestion was provided that the user have the option of summarizing scores for a particular range (i.e., flag all scores below 0.3), pollutant, or attribute. To the extent possible, this manual has been revised to provide suggestions on how to overcome some of the shortcomings in the DARS software by making full use of the current software functions until the EPA is able to revise the program.

DARS Background

DARS provides an overall confidence rating for an emissions inventory. Although the EPA originally developed DARS to assist in evaluating country level inventories of greenhouse gases that had been developed using area source methods, the system has been expanded so it can be applied to point source inventories as well.

The system breaks down emission estimates into emission factors and activity data; with an emission estimate being the product of the two. Each DARS rating is based on four data attributes that are believed to influence the accuracy, appropriateness, and reliability of an emission factor or activity data. The four data attributes are the measurement technique, source specificity, spatial congruity, and temporal congruity. Using DARS, the user determines a rating of 1 to 10 for each of these attributes.

The **measurement** attribute deals explicitly with measurement. The best results are usually obtained by direct measurement of emissions (either by source testing or CEMS) or by measurement of surrogate parameters that have a strong, statistically documented correlation with the pollutant of interest. Emission estimates based on continuous monitoring will receive a higher rating than emission estimates from laboratory, bench-scale, or pilot studies.

The **specificity** of source category requires a clear understanding of the source category and a good understanding of the source of the emission factor and activity data. It is most important to know if the emission factor (or activity data) was specifically developed for the source category, and if not, what is the expected variability. For example, an emission factor developed for a subset or superset of the intended source or process would receive a higher rating than an emission factor developed for a subset of the category with moderate to high (100 - 1000%) variability.

¹ Emission Inventory Improvement Program, 1997. EIIP Volume VI: Quality Assurance Procedures. EPA-454/R-97-004f. State and Territorial Air Pollution Program Administrators/Association of Local Air Pollution Control Officials and U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.

The **spatial** congruity attribute regards regional or local variability. Regional or local variability in emissions are attributable to climate, terrain, socioeconomics, demographics, or other factors. For example, evaporative losses of volatile organic compounds (VOCs) are affected by temperature. If temperature is not accounted for in the emission factor equations, then the DARS rating would not be as high.

The **temporal** congruity component describes the match between the temporal scale of the emission factor or activity data, and the temporal scale of the inventory. It is most important to know if the emission factor or activity is based on the correct time scale. For example, an estimate of annual emissions based on emission factors with an annual basis would receive a higher DARS rating than an estimate of annual emissions based on emission factors with an hourly basis.

The DARS software rates the above four attributes for each emission factor and activity data comprising an emission inventory, and computes a composite rating for the overall inventory. The DARS software also provides ratings for subsets of the inventory to provide a quality perspective on these subsets. The DARS approach, when applied systematically by inventory analysts, can be used to provide a measure of the merits of one emission estimate or inventory relative to another.

Principles of DARS Rating

In DARS, users assign a rating in the range of 1 to 10. A key feature of the DARS rating system is that the attributes are independent of one another. Four ratings are assigned to both the emission factor and the activity data, for a total of eight assigned ratings based on the perceived quality of the data. Composite ratings are derived from the assigned ratings for both the emission factor and the activity.

Although the DARS approach is quantitative (because it uses numeric ratings), the ratings are based on qualitative and often subjective assessments. The DARS cannot guarantee that an emission inventory with a higher overall rating is better quality, more accurate, or closer to the true value. The inventory with the higher overall rating is likely to be a better estimate given the techniques and methodologies employed in its development.

Goals of DARS

Among the proposed uses of DARS are:

- to identify the weakest areas of an existing inventory for further research and improvement;
- to quickly compare and rank different inventories;
- to rank alternative emission estimation methods; and
- to set Data Quality Objective (DQO) targets during inventory planning and for future inventories.

Goals of this Beta Test

The goals of this beta test are to determine if the DARS software meets the needs of the user community. Beta testers are being asked to provide feedback about the value of this software to their inventory program after they've read through this manual and completed a rating session.

The software system is also being provided to this subset of users to determine if it functions as intended, and if it is relatively easy for the average inventory developer/reviewer to use. Beta users are being asked to assess the software and provide the software developers with specific feedback on problems that occurred, features and terminology that is not clear, etc. Depending on the outcome of this exercise, the DARS software may be revised before release to the public.

INSTALLING THE DARS SOFTWARE

System Requirements

The DARS software is designed for a 486-60 MHz pc computer with 8K RAM, either Windows 3.1 or Window 95 operating system, and a Super VGA monitor that has a 800 x 600 pixel resolution. Change your display resolution to 800 x 600 pixels in the Windows setup under the Control Panel before installing DARS. Also, before inserting any disks to install DARS, close any applications that you may be running, for example, Microsoft Office. DARS cannot install system files or update shared files if they are being used.

It is important to note that the DARS Setup program will automatically update some of the Windows files on your computer if Microsoft Corporation has issued updates to files on your system. If you have older versions of Windows-based programs (especially Windows 3.0 based programs), this file update may cause compatibility problems when you try to run these older programs after installing the DARS software system. Users with these older versions may want to back up a copy of their current Windows files before installing the DARS software program. If you are running Windows 3.1 or later Windows revisions, we do not expect this file back-up to be necessary.

Windows does not have to be reinstalled each time you use DARS. However, you will have to restart your backed up version of Windows if your old programs do not run with the Windows files updated by the DARS setup program.

Installation

You have been given a set of four diskettes.

- Insert Disk 1 of 4.

If you have Windows 3.11 for Work Groups, go to File Manager and select the 3.5" floppy drive. Double-click on SETUP.EXE to copy the initialization files.

If you have Windows 95, click on START and select RUN. At the prompt, type A:SETUP and press Enter.

- Insert Disk 2 of 4 as instructed. The DARS Setup program will recommend a destination directory called C:\DARS. You may create your own destination directory by choosing "Directory. Press OK once the destination directory has been identified.
- Insert Disks 3 and 4 as instructed. DARS will indicate when the program has been successfully installed.

If you have Windows 3.11 for Work Groups, the DARS icon will appear in Program Manager.

If you have Windows 95, the installation procedure will create a temporary window containing the DARS icon. You will be able to point and drag the DARS icon to the Desktop, creating a shortcut to DARS.

USING THE DARS SOFTWARE

Now that you have successfully loaded the program, click on the DARS icon to begin your DARS session. After a pop up window introduces you to the DARS software, you will see the DARS main menu screen. Your two options at this point are the File menu and the Define Session menu.



- To work with an inventory imported into DARS or to enter a new inventory element into an existing DARS inventory, select Define Session from the DARS main menu. Use Define Session after you have already imported an inventory and now want to rate it. In this user's manual, go to Defining A Session for details.
- To convert and then import an inventory, select Retrieve Spreadsheet under the File menu. Select Convert to convert your spreadsheet to the format needed for DARS. Then select OK, re-enter File and select Import Inventory under the File menu. Use Import Inventory when you want to import an inventory into the DARS system to be rated. In this user's manual, go to Converting and Importing Data From A Spreadsheet for details. The other functions under the File menu are not operable, but will be programmed into future version of the DARS software.

Defining A Session

The DARS software will enable you to rate an inventory by rating each element in the inventory and compiling the individual ratings into a composite inventory rating. Composite ratings can also be created for subsets of the inventory, such as counties and major source categories. The DARS software also enables you to prepare summary reports on individual inventory element ratings, and to update and/or add individual elements to the inventory. Each of these operations begins by defining the inventory element or elements on which you wish to perform these operations using the Define Session function in DARS.

Within the DARS software, an Inventory Element is any unique combination of the data that are shown in the Define Rating Session window. For example, an Inventory Element for an area source might be a 1997 VOC emission from a dry

cleaner in Johnson County, North Carolina. Or an Inventory Element for a point source might be a 1997 SOx emission from coal-fired utility boilers in Johnson County, North Carolina.

Point sources are often too numerous to be entered and rated in DARS individually. To solve this problem, we recommend grouping point sources into sets of similarly estimated sources and rating the point source sets as a single DARS element. To rate point source groups, they must be combined before importing the data into the DARS system. (Importing data will be discussed later.) Within DARS you will not be able to delineate which inventory elements have been combined for rating. Readers should refer to Appendix F of the EIIP Guidance Document for more information on point source groupings.

Use the **Define Rating Session** window to define an Inventory Element to be rated or operated upon. Click on **Define Session** from the DARS main menu to bring up the **Define Session** window. Think of the **Define Rating Session** screen as a window to your database. You will be able to view or edit elements of your inventory and to choose which part of your inventory you want to rate. You will be able to rate one portion of your inventory at a time, by rating one Inventory Element at a time.

The top portion of the **Define Rating Session** window allows you to view the values that define an Inventory Element. The bottom portion allows you to view or edit values that make up an Inventory Element. On the top portion of the window you will see your edits as they happen. The top portion will remain visible as you continue on with the rating session.

Define Rating Session

Inventory Name : Source Type
 Geographic Levels: Source Category Code
 SubCategory
 Pollutant Name

Inventory	Location	Source Type	Src Category	Subcategory	Pollutant
Inventory Name: <input type="text" value="DARSdemo"/>	Geographic Level 1: <input type="text" value="COUNTY"/>				
Description: <div style="border: 1px solid black; height: 60px; width: 100%;"></div>	Geographic Level 2: <input type="text"/>				
	(optional)				
	Geographic Level 3: <input type="text"/>				
(optional)					
Inventory Base Year: <input type="text"/>					

The two specific operations we will describe for the Define Rating Session are:

Selecting an Element from the database to be quality rated or reported on, and Adding/Deleting elements.

The tabs across the middle of the Define Rating Session screen represent the information categories used by DARS to define an inventory element. The information under each tab must be defined to complete the defining (or specifying) of an inventory element. Omitting the information under one of the tabs will prevent DARS from accepting the inventory element or including the element in the DARS database.

The tabs also represent the hierarchy used by DARS to store and retrieve inventory elements. It is important to proceed through the tabs from left to right, especially when editing or adding inventory elements. Not proceeding through the tabs from left to right will destroy the data storage hierarchy and prevent DARS from accessing that data element.

In summary, it is important to complete the information under all tabs and proceed through the tabs from left to right.

Selecting an Element

When selecting an emission inventory element from the DARS inventory in order to review its data, rate its data attributes, or print a report on the element, you will begin with the Inventory tab, and using the scroll bar or VCR buttons on the bottom left of the window, proceed through the various stored inventories until the desired inventory name is showing in the inventory window. After locating the desired inventory, click on the Location tab and use the scroll bars to again proceed through the counties that are resident in the inventory until the desired county name is showing in the County window. After locating the desired county, click on the Source Type tab and using the scroll bars, proceed through the source types represented in the desired county until the desired source type is shown in the Source Type window. Using the same procedures, move from left to right through each tab until the desired inventory element has been located in the DARS database and is shown in the windows in the upper portion of the Define Rating Session screen. Now that the desired emission inventory element has been selected from the DARS database, click on the Accept button above the inventory tab to complete the session definition process.

After accepting the emission inventory element, the other menu functions at the top of the screen become active, allowing you to select one of the following functions:

Rate Factor Attributes - where you rate the emission factor attributes of

the emission inventory element you have just defined,

Rate Activity Attributes - where you rate the activity data attributes of the emission inventory element you have just defined,

Session Summary - where you can view a summary of the factor and activity ratings stored in DARS, and

Reports - where you can compile reports on the emission inventory element and on the area of the emission inventory from which the element was derived.

These menu functions are discussed in later sections of this manual.

Adding/Deleting Elements

Inventory elements are added and deleted from the inventory using the add and delete buttons at the bottom of the Define Rating Session screen. The add button must be clicked before the new information is typed in the appropriate fields on the tab where new data is to be added. If you are on the county tab and click on the add button, the database opens a new county file and populates it with the data you proceed to enter. Any new file must be populated with at least one emission inventory element or a null data set error will occur. The new emission inventory element is created by proceeding through each successive tab to the right, entering data in the blank windows. When adding to the inventory it is important to not click on the accept button until the inventory element has been completely defined or created, including specifying the emission rate.

The delete button deletes all inventory elements resident under the deleted tab.

Deleting a county, for instance, deletes the county and all emission inventory elements that were resident in that county. Similarly, deleting a source category, such as boilers, within a county, such as Johnson, will delete all boilers within Johnson, but will not affect the boiler inventory elements under any other county.

The tabs are defined as follows:

- **Inventory** - This tab allows you to name an Inventory Element. If you imported a spreadsheet, the name that you gave the spreadsheet will appear in the inventory box. Use the Description field to further identify the Inventory Element. The Description field will help you find previously-rated inventories that have been stored. Once you have entered more than one inventory, the scroll bar at the lower left side of the tab allows you to move forward and backward to the inventory of choice.
- **Location** - The default first level definition of Location is county. County was chosen to simplify report sorting. County is the only level that this version of the DARS software can sort on. You do not have to enter a county name, however. You can enter any location descriptor in this field that you wish. The second and third levels allow you to further define the location and can be used to refine or broaden your location. For example, the second level might be a multi-county non-attainment region and the third level might be a quadrant of the state. To move on to the next tab only the first level needs to have an entry.
- **Source Type** - For the Beta version of DARS, only two Source Types may be chosen: area or point. Later versions of DARS will include mobile and biogenic source type choices.
- **Source Category** - DARS is not pre-loaded with any source category codes or names at this time. Types of codes that may be entered include Source Category Codes (SCCs), Standard Industrial Classification (SIC) codes, and Area and Mobile Source (AMS) Codes. To enter a Source Category code and name, you will simply click on the ADD button and then enter the code and name. To see your list of stored Source Categories, click on the ADD button, followed by the LOOKUP button. Select from the list of source categories and press ENTER.
- **Source Subcategory** - Use this tab to further define the Source Category. Since this tab requires a value entered, you must enter a default value of N/A if you do not wish to specify subcategories.
- **Pollutant** - The DARS Beta version is loaded with only the criteria pollutants. Enter or view stored pollutant data the same way you did under Source Category. The emissions you enter here will be used to calculate the weighted DARS scores, discussed in the Reporting the Rating Session section of this guidance. (The term "Emission Rate" may be misleading--users should enter emissions in tons per year, pounds per year, etc. All emissions must be in the same units within a

given inventory. The terminology may be changed in a future version of the DARS software.)

Once you have completed information in each tab, click on the ACCEPT button. The remainder of the menu bar will become active and you will be able to rate the Inventory Element you have defined.

You will use the Define Session window later to browse previous rating sessions. By using the VCR buttons on the window, you can browse through inventory elements. At this time you are limited to moving one inventory element at a time or jumping all the way to the first inventory element or to the last.

Preparing a Spreadsheet for Importing Into DARS

As mentioned above, large sets of inventory data can also be imported using an external spreadsheet, greatly facilitating the process of entering inventory elements.

The first 9 columns of the spreadsheet are used in the import routine. The column headers (first row of the spreadsheet) must be named as specified by the term in quotation marks below. The columns roughly correlate with the nine tabs of the Define Inventory Element window. The intended use of each column is:

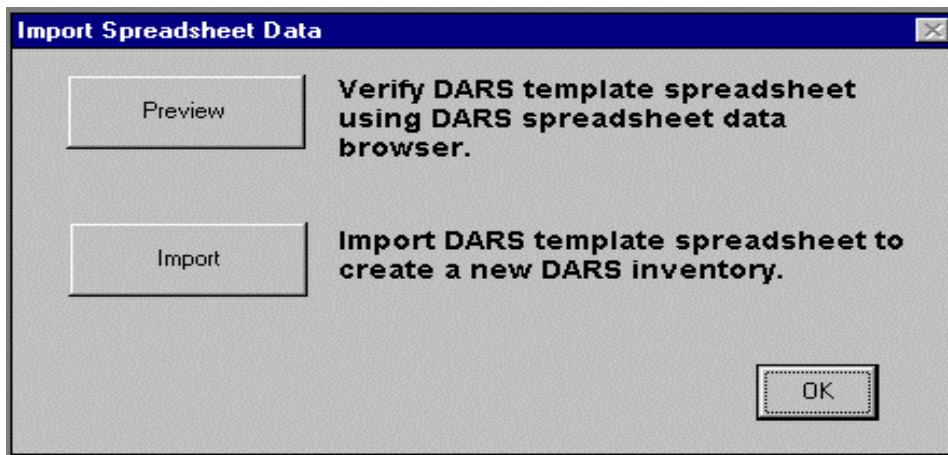
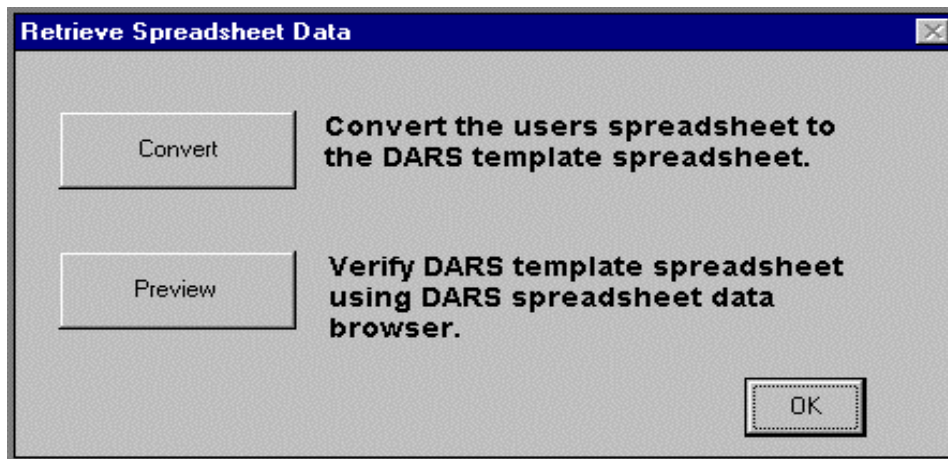
- Column A GeoLevel1 identifies the first level in the geographic hierarchy for the Inventory Element being scored. For the Beta test version, this is defined as a county to simplify creation of the pre-formatted summary reports.
- Column B GeoLevel2 identifies the second level in the geographic hierarchy for the Inventory Element being scored. This column may be used to indicate the state or air basin the source is located in, a sub-county study area, or any other geographic identifier for the source.
- Column C GeoLevel3 identifies the third level in the geographic hierarchy for the Inventory Element being scored. This column may also be used to indicate a state, air basin, sub-county study area, or any other geographic identifier for the source.
- Column D SrcType identifies the Inventory Element source type. For the Beta version, this must be Point or Area.
- Column E SrcCat identifies the Inventory Element source category. The source category may be an alphanumeric value such as found in the SCC coding system.

- Column F SubCategory identifies any source category subcategories. For example, if the source category is Combustion, the subcategory may be Residential Woodstoves.
- Column G Pollutant identifies the Inventory Element pollutant.
- Column H Emissions identifies the numerical value of emissions for the Inventory Element.
- Column I Units identifies the units for the emissions estimate. It is important to use a consistent set of units for each Inventory to ensure accurate reporting of aggregated emissions and DARS scores presented in the summary reports. (The emissions entered are used by the software to develop weighted DARS scores that help identify weak areas of an inventory for improvement.)

GeoLevel1	GeoLevel2	GeoLevel3	SrcType	SrcCat	SubCategory	Pollutant	Emissions	Units	DARscore
Adams	Coastal	Eastern NC	Point	1011 boiler	coal	PM-10	100	TPY	
Adams	Coastal	Eastern NC	Point	1011 boiler	coal	NOx	75	TPY	
Adams	Coastal	Eastern NC	Point	1011 boiler	coal	SOx	120	TPY	
Adams	Coastal	Eastern NC	Point	1011 boiler	oil	SOx	150	TPY	
Adams	Coastal	Eastern NC	Point	1011 boiler	oil	NOx	140	TPY	
Adams	Coastal	Eastern NC	Point	1011 boiler	n gas	NOx	160	TPY	
Adams	Coastal	Eastern NC	Point	1012 heater	oil	SOx	30	TPY	
Adams	Coastal	Eastern NC	Point	1012 heater	oil	NOx	28	TPY	
Adams	Coastal	Eastern NC	Point	1012 heater	n gas	NOx	32	TPY	

Converting and Importing the Spreadsheet Data into DARS

Once you complete the spreadsheet, it is ready to be converted. To convert the inventory, pull down the "File" menu and "Retrieve Spreadsheet." The DARS "Retrieve Spreadsheet Data" window will appear. Select "Convert" and find the file you wish to convert. You will be given a message when the transfer is complete.



The DARS software can convert the following file formats:

- Excel (v2.1 - v7.0)
- Access
- Quattro Pro(v1.0 - v6.0)
- Symphony
- ASCII Delimited
- Lotus 123 (v1.0 - v5.0)
- Paradox (v3.x - 7.0)
- dBase/FoxPro (all versions)
- ASCII Fixed Length

The Preview feature is used to verify the spreadsheet data before Importing using the DARS Spreadsheet Data Browsers. With this optional feature you can preview the spreadsheet data by presenting the following window for each Inventory Element (row) in the spreadsheet. Note that if you wish to review an entire section of the spreadsheet at one time, you cannot do so from within the DARS software at this point. You must return to the original spreadsheet, or proceed to Reports.

Changes to the data cannot be made within the DARS software during this step. If you identify errors in the source file during the preview step, you must go back to the original spreadsheet, edit the file, and convert the file again.

Geographic Level 1	CNTY1
Geographic Level 2	NC
Geographic Level 3	N/A
Source Type	POINT
Source Category Code	234324
Subcategory	21
Pollutant Name	PM-10
Emission Rate	1
Emission Rate Units	TPY

Navigation buttons: [Back] [Forward] [Home] [End]

OK button

The spreadsheet is now ready for importing into the DARS software for rating. To import an Inventory, pull down the File menu and select Import Inventory. The DARS "Import Spreadsheet Data" window will appear.

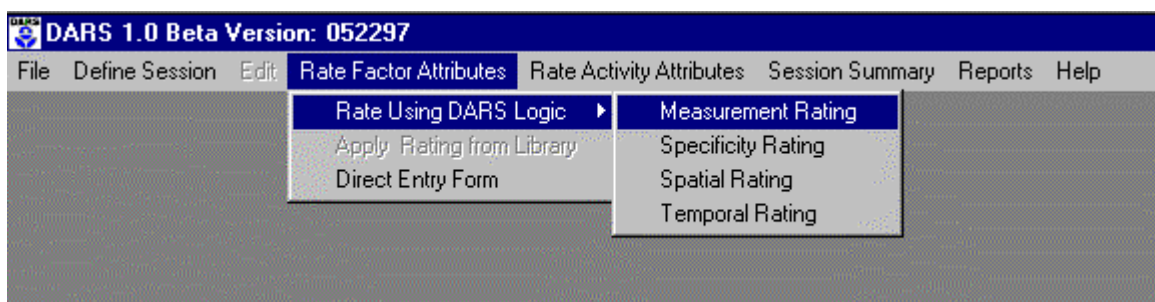
The Import feature imports a DARS spreadsheet and creates a new DARS Inventory. Once the previewed data have been verified using the Preview option, click on the Import option to import the data into DARS for rating. DARS will then ask you to assign an inventory name. An Import Completed message will appear on the window if the import routine was successful. You may exit the Import Spreadsheet Data window by clicking OK.

Conducting a DARS Rating Session

The DARS Rating Session is used to rate the emission factors and activity data comprising an emission inventory element. To begin a rating session, the emission inventory element you wish to rate must first be selected using the instructions in the previous Selecting an Element section of this manual. When the Accept button is selected at the conclusion of the emission inventory element selection process, the Rate Factor Attributes and Rate Activity Attributes buttons become active at the top of the main menu, and you can begin the rating of these attributes.

You should have a copy of Appendix F of the EIIP QA volume with you for your first rating sessions. Similar to the flow charts in Appendix F, you will assign DARS ratings in values that range from 1 to 10, with 10 as the highest rating and 1 as the lowest.

The **Rate Factor Attributes** and **Rate Activity Attributes** menu selections appear at the top of your window only after you have pressed the **ACCEPT** button in **Define Session**. Failing to enter values for all of the index card tabs could result in an error message during the rating session; the entire Inventory Element file must be defined.



For both **Rate Factor Attributes** and **Rate Activity Attributes**, you have the choice of proceeding through the DARS logic flow charts that are shown in Appendix F of the QA document, or you can bypass the flow chart questions and use a direct entry form.

Until you are well-versed in the DARS rating process, it is recommended that you do not use the direct entry form. For details on using the direct entry form, go to the **Direct Entry Form** discussion later in this section.

Rating the Factor Attributes Using DARS Logic

Under the **Rate Factor Attributes** selection, choose **Rate Using DARS Logic**, and select the attribute you wish to rate.

- The **Measurement** attribute deals explicitly with the quality of the factor itself--not how it has been used. The term **factor** as used here also includes direct measurement of emissions.
-
- The **Source Specificity** attribute is used to indicate how specific the original factor is to the source whose emissions were estimated and is now being rated.
- The **Spatial Congruity** attribute deals with the spatial scaling of the factor, with lower ratings assigned for larger special adjustments and

as spatial variability increases.

- The Temporal Congruity attribute describes the match between the factor and the temporal scale of the inventory. The ratings assigned to this attribute also decrease as adjustments are made and variability increases.

You do not need to rate the attributes in the order shown on the window; you can rate them in any order you wish (which is why you must manually select an attribute to rate each time).

When you select an attribute for rating, such as the Measurement attribute under the Rate Factor Attributes menu, you will see a screen similar to the one shown below. DARS will present you with the first question in the appropriate DARS logic tree. Click on the most appropriate answer to the question among the options presented in the lower left portion of the screen, and then Accept the answer. The ACCEPT button advances you to another question until you reach the end of one of the flow chart branches. The Q1, Q2, Q3, etc. buttons allow you to move back to previous questions.

Remember that your response to a question determines the flow chart branch for the subsequent questions. Therefore, if you use the Q1, Q2, Q3, etc. buttons to move back to previous questions and change your response, all of the responses following the changed response will be deleted because you will be moving down a different branch of the flow chart.

Answering Questions to Rate the Attributes

The questions that you are asked to answer have been taken from the DARS flow charts in Appendix F. As you review the questions, toggle between YES and NO depending on your response. Pressing ACCEPT on a YES response takes you down one branch of the flow chart, while pressing ACCEPT on a NO response takes you down another branch. The number of questions you encounter varies for each flow chart and branch you select.

Eventually you will reach a question and accept a YES or NO response that asks you to choose between two DARS ratings, or transfers you to window that gives you the resulting DARS rating.

DARS Emission Factor Measurement Attribute Rating

Q 1 Is Factor based on measurement of emissions.

Q 2 Continuous or near continuous measurement of intended pollutant from all relevant sites. Data capture >90%.

Q 3 Intermittent measurements of intended pollutant.

Q 4 Factor derived from ratio to measured pollutant.

Q 5 **Factor based on speciation profile applied to measurement of other**

Please Indicate Your Response Below

Factor based on speciation profile applied to measurement of other pollutant

☐ 5

☒ 6

Accept

If you wish to override a standard DARS rating, you can do so from the Direct Entry Form that will be discussed later in this guidance. The DARS ratings reported in the Session Summary will be the last ratings entered, regardless of whether you used the Direct Entry Form, Rate Factor Attributes, or Rate Activity Attributes.

Pressing the ACCEPT button of the standard DARS rating completes the rating of this attribute. Select another attribute and repeat the process until you have rated all four of the Factor attributes. You must accept a rating in order to leave this window. If you accept a score and then wish to change it, you simply re-rate the attribute.

Rating the Activity Attributes Using DARS Logic

After rating all four Factor attributes, you are ready to rate the Activity attributes. (Note again that you can rate the attributes in any order that you like.)

Choose the Rate Using DARS Logic under the Rate Activity Attributes selection, and select the Activity attribute you wish to rate. As described in Appendix F, this series of flow charts is used to evaluate the development and use of activity data used in the inventory.

- The **Measurement** attribute deals explicitly with the quality of the activity data.
- The **Source Specificity** attribute is used to indicate how specific the activity data are to the source whose emissions were estimated and is now being rated. This attribute differs from the **Measurement** attribute because it does not deal with the question of whether or not the activity data were measured, only if they were specifically developed for the source category they were applied to.
- The **Spatial Congruity** attribute deals with the spatial scaling of the activity data. The spatial scaling of activity data is a common practice in inventory development.
- The **Temporal Congruity** attribute describes the match between the activity data and the temporal scale of the inventory. The temporal scaling of activity data is also a common practice in inventory development.

When you have rated all four Activity attributes, you can review your DARS ratings under the **Session Summary** function on the main menu bar.

Using the Direct Entry Form

If you choose to bypass the DARS logic flow charts and use the **Direct Entry Form**, under either the **Rate Factor** or **Rate Activity Attributes** menu options, it is even more important that you have a copy of Appendix F with you during the rating session and refer to it often.

Similar to Appendix F and the responses you are prompted to enter in the **Rate Factor Attributes** and **Rate Activity Attributes**, enter values from 1 to 10 for each of the four factor attributes and the four activity attributes. If you enter a value higher than 10 the program will insert a default value of 10.

Clicking on **OK** ends the direct entry rating session and returns you to the main menu.

Reviewing a Rating Session Summary

After assigning a DARS rating to an emission inventory element, the next menu selection you should click on is **Session Summary**. It does not matter whether

you assigned DARS ratings to the inventory attributes using the flow charts, or entered them manually through the Direct Entry Form.

The Current Session Summary window shows you the scores you selected for each inventory attribute. The scores shown are the most recent that have been entered. A careful review of the Current Session Summary window is recommended if you are making changes to any values that have already been entered. The software has not been designed to prevent you from inadvertently changing an attribute score that you have already entered, nor will it warn you that an attribute has already been rated.

ATTRIBUTE	FACTOR *	ACTIVITY	EMISSIONS
Measurement	0.6	0.3	0.2
Source Specificity	0.7	0.9	0.6
Spatial	0.7	0.8	0.6
Temporal	0.7	0.8	0.6
COMPOSITE	0.7	0.7	0.5

Comments:
Comment Text Will Go Here.

* All scores shown are divided by 10, consistent with the DARS manual methodology.

OK

You will note in Current Session Summary that you were prompted to enter values from 1 to 10 in the rating sessions, but the DARS software divides values by 10 when calculating the composite and emissions scores. This adjustment is automatically made so that the DARS software system is consistent with the DARS rating methodology in Appendix F.

Note: The feature that allows you to enter comments has not been installed at this time. You can save comments on your rating session from Reports.

After reviewing the values in the Current Session Summary window, you can press OK to move back to the main menu. If you wish to move onto Reports you should make sure that all eight attributes have been rated. At this time the software does not allow you to save a rated session for future use.

The Inventory Element Summary reporting option creates a report showing the DARS ratings, by individual attribute, for each inventory element in the selected inventory. The inventory shown in the report is the inventory within which resides the inventory element you selected in your Selecting an Element session described in a previous section of this manual by the same title. The Inventory Element Summary report is very helpful for identifying any element in an inventory which has incomplete information, or which has not been fully rated. The button functions for this screen function the same as the buttons on the Session report screen, described above.

**DARS Inventory Element Listing Report
1995 Air-Criteria**

County	Src Type	Src Category	Sub Cat.	Poll.	Emission Factor				Activity				COMPOSITE
					M	\$	\$	T	M	\$	\$	T	
Adams County	Area	333444	0	PM	0.50	0.90	0.90	0.50	0.50	0.90	0.90	0.50	0.53
Adams County	Area	333444	0	PM-10	0.60	0.40	1.00	0.20	0.60	0.40	1.00	0.20	0.39
Adams County	Area	333444	0	SOx	0.20	1.00	0.70	0.40	0.20	1.00	0.70	0.40	0.42
Adams County	Area	456456	24	PM-10	0.60	0.50	0.80	0.50	0.60	0.50	0.80	0.50	0.38
Adams County	Area	456456	25	PM	1.00	0.80	0.90	0.80	1.00	0.80	0.90	0.80	0.77
Adams County	Area	456456	26	SOx	0.90	0.70	0.50	1.00	0.90	0.70	0.50	1.00	0.64
Adams County	Point	234324	21	PM-10	1.00	0.70	0.70	0.10	1.00	0.70	0.70	0.10	0.50
Adams County	Point	234324	22	PM	0.80	0.30	0.80	0.80	0.80	0.30	0.80	0.80	0.50
Adams County	Point	234324	23	SOx	0.70	0.90	1.00	0.50	0.70	0.90	1.00	0.50	0.64
Adams County	Point	698767	0	PM	0.70	0.80	0.20	1.00	0.70	0.80	0.20	1.00	0.54
Adams County	Point	698767	0	PM-10	0.40	1.00	0.50	0.70	0.40	1.00	0.50	0.70	0.48
Adams County	Point	698767	0	SOx	0.80	0.50	0.90	0.90	0.80	0.50	0.90	0.90	0.63
Johnson county	Area	333444	0	PM	0.50	0.90	0.80	0.90	0.50	0.90	0.80	0.90	0.63
Johnson county	Area	333444	0	PM-10	0.70	0.40	0.50	0.60	0.70	0.40	0.50	0.60	0.31
Johnson county	Area	333444	0	SOx	0.70	0.60	1.00	1.00	0.70	0.60	1.00	1.00	0.71
Johnson county	Area	456456	24	PM-10	0.20	1.00	0.20	0.70	0.20	1.00	0.20	0.70	0.39
Johnson county	Area	456456	25	PM	0.40	0.50	0.40	0.60	0.40	0.50	0.40	0.60	0.23
Johnson county	Area	456456	26	SOx	0.90	0.80	0.60	0.50	0.90	0.80	0.60	0.50	0.52
Johnson county	Point	234324	21	PM-10	0.60	0.70	0.70	0.70	0.30	0.90	0.80	0.80	0.48

The Geographic Summary report presents an inventory wide summary of the composite DARS ratings for each county in the inventory. The subcategory weighted DARS rating shown in this report is a composite DARS rating for the county that has been compiled from a mass-weighted average of the DARS ratings for each inventory element in the county. The inventory mass fraction shown in this report is the county's mass fraction of the emissions for the entire inventory. The inventory weighted DARS rating shown in this report is the product of the values in the previous two columns. This inventory weighted DARS rating can be used to evaluate each county's individual contribution to the overall inventory rating shown at the bottom of this column.

DARS SUMMARY REPORT BY COUNTY

1995 Air-Criteria
Point
PM-10

			Subcategory Weighted DARS Rating	Inventory Mass Fraction	Inventory Weighted DARS Rating
County					
Adams County	NC	N/A	0.48	0.32	0.15
Johnson County	NC	N/A	0.48	0.04	0.02
Orange County	NC	N/A	0.47	0.32	0.15
Salem County	NC	N/A	0.68	0.32	0.22
Report Summary:			Inventory-wide DARS Composite Rating		0.54

The Source Category Summary report is similar to the Geographic Summary report, but presents the rating session report compiled by source category rather than county.

DARS SUMMARY REPORT BY SOURCE CATEGORY/SUBCATEGORY

1995 Air-Criteria
PM-10
Point

Source Category	Source Category Name	Subcategory	Subcategory Weighted DARS Rating	Inventory Mass Fraction	Inventory Weighted DARS Rating
234324	Boilers	21	0.59	0.16	0.09
Source Category Total			0.59	0.16	0.09
698767	Turbines	N/A	0.53	0.84	0.45
Sources Category Total			0.53	0.84	0.45
Report Summary:			Inventory-wide DARS Composite Rating		0.54

The Inventory Summary report presents the weighted DARS ratings, by attribute, for the entire rated inventory. This report is very valuable for determining which attributes are generally weak across the entire inventory, and would be the focus of an inventory improvement plan. The pop up screen showing Total Mass Emissions represents the total emissions for the pollutant and source type (point vs area) in the entire inventory. This information is presented merely as a tool for user's who would like to use it as a pointer for the strengths and weaknesses of the inventory relative to a source's contribution to emissions.

DARS INVENTORY-WIDE ATTRIBUTE RATING SUMMARY REPORT

1995 Air-Criteria

PM-10

Inventory Description:

ATTRIBUTE	WEIGHTED EMISSION FACTOR RATING	WEIGHTED ACTIVITY RATING	WEIGHTED EMISSIONS RATING
Measurement	0.64	0.62	0.43
Source Specificity	0.74	0.75	0.68
Spatial	0.78	0.79	0.66
Temporal	0.60	0.61	0.39
COMPOSITE	0.69	0.69	0.54

Exporting the Rating Session

The EXPORT button on the small menu bar at the bottom of the window (either the suitcase or the envelope) allows you to transfer the information in each report to another program such as MS Excel®. After clicking on the export icon, you will be prompted to specify what software format you would like for the report. After selecting a software format click the OK button and you will be prompted, via a new screen, to specify a file name and the drive destination for the exported report. After completing your selections, click OK and the file transfer will be completed. After the rating session has been exported, the results can be sorted a number of ways to expand the reporting capabilities.